

## **A026 Tailed Frog (*Ascaphus truei*)**

Family: Ascaphidae Order: Anura Class: Amphibia

Written by: S. Morey

Reviewed by: T. Papenfuss

Edited by: R. Duke, J. Harris

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### **DISTRIBUTION, ABUNDANCE, AND SEASONALITY**

The tailed frog often is considered uncommon, but it has been shown by experienced observers to be quite common in suitable habitats. Presently this species is known only from Del Norte, Siskiyou, Humboldt, Trinity, Shasta, Tehama, and Mendocino counties (Bury 1968, Jennings and Hayes 1994), but Salt (1952) suggested a southern limit to the range as far south as central Sonoma Co. In California, tailed frogs occur in permanent streams of low temperatures in conifer-dominated habitats including redwood, Douglas-fir, Klamath mixed-conifer, and ponderosa pine habitats. It also occurs in montane hardwood-conifer habitats. Tailed frogs occur more frequently in mature or late-successional stands than in younger stands (Bury 1983, Bury and Corn 1988, Welsh 1990, Jennings and Hayes 1994). The elevational range of the species is from sea level to 1970 m (6500 ft).

[Full Size Distribution Map](#) (image is 45kb)

### **SPECIFIC HABITAT REQUIREMENTS**

**Feeding:-** Adults forage primarily terrestrially along stream banks but also occasionally feed underwater. A wide variety of food items taken, including both aquatic and terrestrial larval and adult insects, other arthropods (especially spiders), and snails (Metter 1964). The same author found tadpoles feeding primarily on diatoms, which are scraped off the surface of submerged rocks in stream bottoms. Tadpoles also consume small quantities of filamentous green algae and desmids. Large quantities of conifer pollen are consumed seasonally by tadpoles.

**Cover:-** During the day adults seek cover under submerged rocks and logs in the stream or occasionally under similar surface objects close to the stream. Individuals have also been found in crevices in spray-drenched cliff walls near waterfalls. During winter individuals are less active, especially inland, and appear to retreat beneath large logs and boulders. Tadpoles require cool streams (15ø C or less, de Vlaming and Bury 1970) with smooth-surfaced stones with a minimum diameter of 55 mm (2.25 in). Tadpoles probably spend most of their time attached to such rocks by a large oral sucker. They prefer rocks in turbulent water (Altig and Brodie 1972) to ones in smooth, swiftly flowing water.

**Reproduction:-** Mating occurs underwater during much of the April to October activity period. Eggs are laid several months later in globular masses attached to the underside of submerged rocks (Nussbaum et al. 1983, Jennings and Hayes 1994).

**Water:-** Most California populations occur in areas that receive more than 100 cm (40 in) of rainfall annually, and distribution may be limited by required presence of permanent streams (Bury 1968). Permanent water is critical because the aquatic larvae require 2 to 3 years to

transform. High nighttime relative humidity, and the subsequent formation of dew on creekside vegetation, may facilitate nocturnal foraging by adults (Metter 1964).

**Pattern:-** This species is restricted to perennial streams of low temperature in steep-walled valleys with dense vegetation. Intermittent streams are unsuitable. Egg embryos tolerate water temperature between 5ø-18øC. Tadpoles actively avoid water temperatures above 22øC and die at temperatures exceeding 30øC, while water temperatures between 23ø-24ø C appear lethal to adults (Jennings and Hayes 1994).

## **SPECIES LIFE HISTORY**

**Activity Patterns:-** Primarily nocturnal but occasionally abroad during the day. Adults are especially active, even moving away from the stream, during or just after rains at night. Tadpoles exhibit a diel cycle that involves movement to high positions on rocks (even out of water) at night. Altig and Brodie (1972) suggested that such behavior is necessary for feeding. Adults are active between April and October (Jennings and Hayes 1994).

**Seasonal Movements/Migration:-** Adults exhibit very little seasonal movement, while pre-reproductive individuals display limited movement (Jennings and Hayes 1994). Metter (1964) mentioned one locality where individuals appeared to move up creeks to areas of heavier shade and creekside vegetation as the dry season progressed. Periods of winter inactivity seen in some populations are spent in refuges within or close to the normal area of activity.

**Home Range:-** Individuals have been collected up to 12 m (40 ft) from streams during moist periods. During drier periods frogs are usually restricted to the stream bed itself. The normal home range has a long dimension that rarely exceeds 24 m (80 ft).

**Territory:-** Not known to defend resources, but males may temporarily defend a space around females during breeding. Unlike most frogs, *Ascaphus* are not known to be vocal. Males may call while underwater but there is no evidence at present.

**Reproduction:-** Breeding normally occurs in the early fall (late August and September), but pairs may be found clasped together at any time of the year (Nussbaum et al. 1983). Females retain viable sperm in the lower portion of the oviduct for several months, and fertilized eggs are laid during the summer after mating. Clutch sizes range from 33 to 98 eggs per clutch (Nussbaum et al. 1983). Eggs hatch in about a month and aquatic larvae require 2 to 3 years to transform. Metamorphosis normally occurs in the early fall.

**Niche:-** A variety of amphibians, including *Rhyacotriton variegatus*, *Dicamptodon ensatus*, *Ambystoma macrodactylum*, *Bufo boreas*, *Hyla regilla*, *Rana pretiosa* and *Rana boylei*, all commonly coexist with *Ascaphus*. Whether or not competition for resources occurs between these species is unknown. Garter snakes have been known to take both tadpoles and adults, although in captivity they have been observed to reject adult *Ascaphus* after initially capturing them. *Dicamptodon* larvae and adult *Rana boylei* are known to eat tailed frog tadpoles, and trout have been observed to take both tadpoles and adults.

**General Comments:-** Extensive logging activities may adversely affect existing tailed frog populations. Noble and Putnam (1931), Metter (1964), Bury (1983), and Nussbaum et al.

(1983) all noted that tailed frogs disappear from logged areas, probably the result of increased water temperature and siltation. The observations of Bury (1968) lead him to suggest that the detrimental effects of logging on *Ascaphus* are more pronounced inland than coastally.

## REFERENCES

- Altig, R., and E. D. Brodie, Jr. 1972. Laboratory behavior of *Ascaphus truei* tadpoles. *J. Herpetol.* 6:21-24.
- Bury, R. B. 1968. The distribution of *Ascaphus truei* in California. *Herpetologica* 24:39-46.
- Bury, R. B. 1983. Differences in amphibian populations in logged and old-growth redwood forest. *Northwest. Sci.* 57:167-178.
- Bury, R. B., and P. S. Corn. 1988. Douglas-fir forests in the Oregon and Washington Cascades: relation of the herpetofauna to stand age and moisture. Pages 11-22 in R. C. Szaro, K. E. Severson, and D. R. Patton, tech. coords. Proceedings of the symposium on the management of amphibians, reptiles, and small mammals in North America. U.S.D.A. Forest Service, Gen. Tech. Rept. RM-166.
- de Vlaming, V. L., and R. B. Bury. 1970. Thermal selection in tadpoles of the tailed frog *Ascaphus truei*. *J. Herpetol.* 4:179-189.
- Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. State of California, The Resources Agency, Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, CA. 255 pp.
- Metter D. E. 1964. A morphological and ecological comparison of two populations of the tailed frog, *Ascaphus truei* Stejneger. *Copeia* 1964:181-195.
- Metter D. E. 1968. *Ascaphus* and *A. truei*. *Cat. Am. Amphibians and Reptiles* 69.1-69.2.
- Noble, G. K., and P. G. Putnam. 1931. Observations on the life history of *Ascaphus truei* Stejneger. *Copeia* 1931:97-101.
- Nussbaum, R. A., E. D. Brodie, Jr., and R. M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. Univ. Press of Idaho. 332 pp.
- Salt, G. S. 1952. The bell toad, *Ascaphus truei*, in Mendocino County, California. *Copeia* 1952:193-194.
- Welsh, H. H., Jr. 1990. Relictual amphibians and old-growth forests. *Cons. Biol.* 4:309-319.

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